The Economic Effects of Indiana's Property Tax Rate Limits

Nalitra Thaiprasert, PhD

Dagney Faulk, PhD

Michael J. Hicks, PhD

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The goal of this study is to provide analysis of the effects of property tax caps on Indiana's economic activities.

Introduction

There has been considerable analysis of the effects of the property tax rate limits (also known as property tax caps) in Indiana. However, these studies have primarily addressed the fiscal impact of the caps on property tax payments for local government budgets and various classes of property. For example, estimates by Indiana's Legislative Services Agency (2009) quantify the impact of the caps on the change in the property tax levy for reporting counties and the overall impact on homesteads and non-homestead property. A respected private consultancy, Umbaugh and Associates has estimated the changes in property tax revenues for various counties and other taxing jurisdictions. However, to our knowledge there has been no analysis of the more general economic effects resulting from the imposition of property tax caps in Indiana.

The goal of this study is to fill the void by providing an analysis of the effects of property tax caps on economic activity in Indiana. The analytical framework that we use is a Regional Computable General Equilibrium (CGE) model – the Indiana CGE Model.[1] The analysis includes the effects of the sales tax increase that was implemented as part of the 2008 property tax restructuring. We analyze the effects of property tax rate limits and the sales tax increase on economic indicators such as output, household disposable income, and sales in various industry sectors.

The Indiana CGE Model

The Indiana CGE model was constructed to simulate the combined effects of these policy changes. For example, the property tax caps will increase the disposable income of households (in aggregate) as they pay less property tax. Lower property taxes are also expected to increase capital investment as the cost of capital decreases. This creates jobs and increases household income. Yet, the higher sales tax decreases disposable income as households pay more sales tax, which ultimately affects industry sales. Lower tax revenues means less government spending. Our model captures each of these effects simultaneously.

CGE models are used to examine a variety of policy initiatives. See Partridge and Rickman (1998, 2007) for a survey. A far more limited body of literature has used CGE models to analyze the impacts of property tax changes. Waters, Holland and Weber (1997) examine the impact of Oregon's Measure 5, a property tax limit passed in 1990, and find output and income increase after the limitation is passed with high income households benefitting more than low income households. They also find that state and local government expenditures and revenue decrease substantially. Julia-Wise, Cooke and Holland (2002) examine the general equilibrium effects of an initiative to reduce property taxes by 50 percent in Idaho and find that the property tax reduction would increase economic activity.

Our model includes nine household income groups and 44 industry sectors based on the 3-digit NAICS code with further disaggregation of some sectors, such as groceries from the food sector, pharmaceutical manufacturing from chemical manufacturing, and apartments from real estate.

Our analysis proceeds as follows. We provide details about the 2008 property tax rate limits currently being implemented in Indiana. Next, we provide a brief description of the CGE model simulation procedure, followed by a discussion of the timing and size of impacts. Conclusions and implications appear in the final section.

Figure 1: Real Net Property Tax Levy
(Indiana Local Governments, 1977-2007)
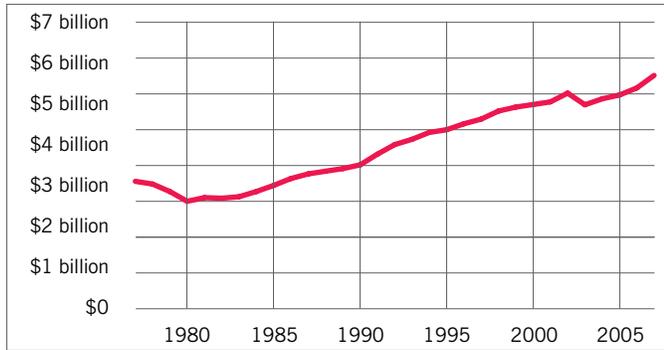
Figure 2: Per Capita Real Net Property Tax Levy
(Indiana Local Governments, 1977-2007)
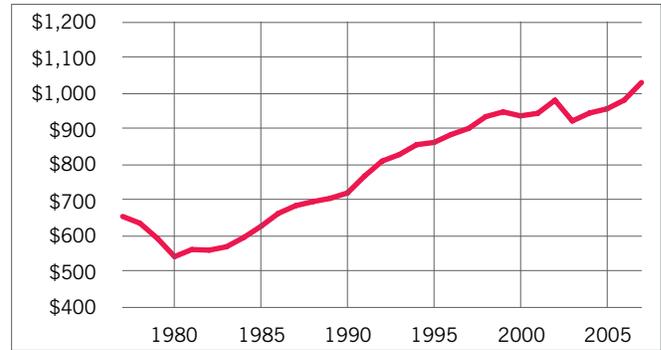
Source: *Indiana Handbook of Taxes, Revenues and Appropriations,* various years. Adjusted for inflation (2007 purchasing power) using the CPI-U. The total net levy is aggregated from the net levy for each county. Net property tax levy is gross levy minus the property tax replacement credit.

Property Tax Rate Limits in Indiana

Property tax limits have a long history in the U.S. Still the predominant form of local government finance, most states have been chipping away at local government's ability to raise revenue through property taxes for most of the 20th century and into the 21st century. In March 2008, Indiana's Governor Mitch Daniels signed legislation to provide property tax relief and protect taxpayers from future increases in the property tax.[2] The 2008 restructuring is the latest in a long line of both legislated and court-ordered property tax changes implemented in the state. See Faulk (2008) for an overview. Property tax limits were first implemented in Indiana in the 1930s, with subsequent adjustments occurring in the 1970s and 1980s. See Bennett and Stullich (1992) chapters 1 and 3 for details. The result of this legislative action was a complex system of levy growth limits for most funds, rate limits for some funds, and a process to appeal the limitations. According to Anderson (2006, Table 1) Indiana is one of 43 states in the continental U.S. that imposed some form of property tax limit at that time. Indiana is also one of 26 states that does not have mandatory annual assessments.

A variety of factors contributed to widespread dissatisfaction with Indiana's property tax system in the early 2000s. These included a mass reassessment of property, which resulted in an increase in assessed value and variability in assessment practices that led to widely differing tax levies on similar properties. The period also saw the elimination of the inventory tax and the closing of several large manufacturing firms in the state, which shifted the tax burden to other taxpayers. See Bohannon, Faulk and Hicks (2010) for an analysis. The 2008 property tax reform imposed stringent limits on property tax rates and local spending in Indiana in addition to reforms of the assessment process.[3] These caps have dramatically affected some local government budgets.

Partial implementation of property tax caps occurred in 2009 and will be fully implemented for taxes paid in 2010. The 2010 caps are rate limits that constrain property tax payments to a maximum of 1 percent of gross assessed value (AV) on homesteads,

Table 1: Property Tax Estimates

Property Type	Net Tax Before ($ Million)	Net Tax After ($ Million)	Total Change ($ Million)	Total % Change
Homesteads	2,702	1,687	-1,014	-37.5%
Non-homestead residential	875	730	-144	-16.5%
Apartments	316	260	-55	-17.5%
Ag-business real estate	402	365	-37	-9.3%
Other real estate	1,931	1,864	-67	-3.5%
Personal property	851	802	-49	-5.8%
Total	7,080	5,711	-1,368	-19.3%

Source: Legislative Services Agency, *Property Tax Impact Report*, March 2009, http://www.in.gov/legislative/pdf/PropertyTax_Estimates_By_Property-Class_CurrentLaw_20090323.pdf

2 percent of AV on apartments, other residential, agricultural land, mobile home land and long-term care facilities, and 3 percent of AV on nonresidential (primarily business) real property and personal property. Indiana state government is assuming responsibility for the totality of school general funding and various county child welfare funds. This same legislation raised the sales tax rate by 1 percent (from 6% to 7%) to fund some of these changes.

Background Information

Figures 1 and 2 show the net property tax levy and the property tax levy per capita for local governments in Indiana from 1977 to 2007. The general trend is an increase in total and average property tax payments. Adjusted for inflation the net property tax levy increased from $3.5 billion in 1977 to $6.5 billion in 2007 (85%) and the levy per capita increased from $655 to $1,033 (57.8%). These calculations illustrate that after initial declines in the late 1970s, the inflation adjusted property tax levy increased substantially despite the variety of property tax limits in place.

CGE Model Simulation Procedure

To simulate the economic effects of the property tax caps, we apply the percentage change in property tax revenue from estimates

by the Indiana Legislative Services Agency (LSA) in March 2009 to property tax parameters in the model. For example, to implement the 1 percent cap on homesteads, we reduce property tax rates on homesteads by 37.5 percent[4] (see Table 1). Modeling proceeds in this way because the assessed value of property is not available for each industry sector or household group in the model, so property tax rates and the corresponding caps cannot be determined directly in the model. Details of the simulation appear in Table 2.

Sales taxes are paid on final demand for goods by households (and some businesses). To incorporate this into our model we identify the sales tax base by dividing industries into sales-taxable and non-sales-taxable final demand sectors. See Table 3.

The Timing and Size of Impacts

With the general equilibrium approach, we analyze the economic response of markets and factors of production. We are also able to assess the effects over both the short and long run. This requires some explanation, since time here is not attached specifically to the passage of months. In these types of models, the short run is that period between the policy change and that time when economic agents have had an opportunity to adjust to the policy changes. The long run is then the period after which households, government, businesses and owners of capital have had an opportunity to adjust to the new policy. Though this adjustment begins almost immediately after the policy change, full adjustment would likely require more than three years.

This policy change offers insight into the difference between long and short-run policy impacts. In the short run, a cut to government spending reduces economic activity as governments hire fewer workers and spend less money on goods and services. However, the concomitant decline in tax collections, which boost incomes of households, are not experienced as quickly. Thus, the expected increase in consumer spending and decline in the cost of home ownership do not immediately affect the economy. Likewise, the decline in the cost of purchasing business facilities and equipment occurs only in the long run. However, this is not because business response is slow, but simply that the time requirements for business investment are longer than for household consumption decisions.

This legislation incorporated a phase-in period for the taxes. While this complicates the task of the economic modeler, it greatly lessens the short-run costs on the economy. This is an important part of this legislation. Most of the short-run loss in economic activity is caused by declining local government spending. The benefits of the long run are increased consumer incomes, a reduced cost of housing and a decrease in the cost of business plant and equipment, which boosts economic activity. The problem is that cuts in government spending occur quickly while new investment takes longer to materialize. Businesses make investment decisions with considerable lead, so the investment response will occur with the expectations of the lower tax rate. Because this legislation phases in the tax cut, it reduces the decline in economic activity by

Table 2: Simulation Description

	Description
Base run	• No property tax caps and the sales tax rate is 6 percent.
Simulation	• Homeowner property tax is capped at 1 percent of assessed value (the rate reduced by 37.5% from the base run) • Apartment property tax is capped at 2 percent of assessed value (the rate reduced by 17.5% from the base run) • Agriculture land property tax is capped at 2 percent of assessed value (the rate reduced by 9.3% from the base run) • Business property tax is capped at 3 percent of assessed value (the rate reduced by 3.5% from the base run) • Increase sales tax on all taxable commodities by 1 percent (from 6% to 7%)

Table 3: Taxable and Non-Taxable Sectors for Sales Tax

Sales-Taxable Sectors (27)	Non-Sales-Taxable Sectors (17)
• Crops • Animal production • Miscellaneous agriculture • Mining • Utility • Other food production • Textile and leather • Wood • Paper • Printing • Petroleum and coal • Chemical • Plastics and rubber • Nonmetallic mineral • Primary metal • Fabricated metal • Machinery • Computer and electronics • Electrical appliance • Transportation equipments • Furniture • Miscellaneous manufacturing • Retail trade • Information • Hotel • Restaurant • Other services taxable	• Construction • Grocery • Pharmacy • Wholesale trade • Transportation • Miscellaneous nontaxable manufacturing • Finance • Apartment • Real estate • Management • Professional • Education • Administration • Health • Art and entertainment • Other services nontaxable • Government and special sectors

spreading the effects over a longer period. While it is common for legislation to enjoy a phase-in period, it is not the universal experience. In this case, the adjustment period will have moderated considerably the aggregate effects of lower government spending.

From a modeling standpoint, we employ the generally accepted theory used in CGE modeling which suggests a fixed capital supply while labor is variable in the short run. In the long run, both capital and labor demand and supply are allowed to be variable. Wage rates and rental rates are variable in the short run, but are likely to remain fixed in the long run because factor costs should come back to the original equilibrium level in the long run after experiencing a period of adjustment (Löfgren, et. al. 2002). Savings and investment are fixed in the short run, as businesses need considerable lead time for their investment decisions to materialize into new facilities and equipment. For the long run, we allow investment to be driven by savings so more investment is allowed as firms have had time to adjust their investment plan.

Because the state of Indiana cannot effectively run a budget deficit, our analysis always imposes a balanced budget. Both

government revenue and expenditures decline in the short run as imposing property tax caps will substantially reduce revenue for some local governments. Although some of the revenue previously funded with property tax is replaced with the imposed higher sales tax, it is not enough to cover all previous expenditures. Some of the expenditures that were previously funded with the property tax were transferred to the state general fund with the new legislation. For the long-run analysis, we permit government revenue and expenditures to balance as the economy adjusts to the new tax rates. Through computable general equilibrium simulations, we are able to provide some insight into how this change in the state and local fiscal environment affects households, industry sectors, and the overall level of economic activity. We discuss the effects of imposing property tax caps and a higher sales tax below.

Aggregate Effects

One of the advantages of a general equilibrium model is that it captures the changes in economic activity resulting from a policy change – in this case the property tax caps and higher sales tax rate. Employment may shift among industry sectors, wage and rental rates may adjust, demand for output may change, etc. As a result, income taxes and indirect business taxes are affected even though the policy change does not directly change these taxes. Changes in capital and labor supply and demand resulting from the policy change do impact these taxes. In the short run, there are small decreases in state and local income tax revenue and revenue from indirect business taxes in addition to a small decrease in federal income tax revenue. In the long run, these revenues increase as much as 2.5 percent (results not shown).

Table 4 illustrates the aggregate economic effects of the property tax caps. In the short run, the property tax caps and the increase in the sales tax have a relatively small but negative effect on Gross Regional Product (GRP), the dollar value of all goods and services produced in Indiana. GRP decreases by $296 million (0.12%). However, the long-run results show that the caps have a positive effect on Indiana's economy. GRP increases by 2.6 percent for several reasons. First, there is an increase in demand for goods and services as households have more income. Likewise, investment increases as firms pay lower property taxes. Aggregate production output (sales) decreases in the short run (-0.13%) but increases in the long run (2.75%).

Returns to capital and labor decline in the short run (-0.007% for capital and -0.02% for labor), but increase in the long run (2.64% for capital and 2.76% for labor) as businesses need more of these factors for the production. These factor returns are either return on investment to owners of capital or total compensation for workers. Employment increases by only 418 persons in the short run, but increases as much as 97,000 persons or 2.67 percent in the long run.

There is also growth in net household income for all household groups in both short-run and long-run scenarios due to the property tax caps. Net household income is higher in the long run because households earn more income from the increase in total compensation.

Table 4: Overall Economic Effects (Long and Short Run*)

Variable	Base Run	Short-Run Change	Long-Run Change
Gross regional product ($ million)	238,282	-296 -0.12%	6,191 2.6%
Value of output (sales) ($ million)	529,453	-665.57 -0.13%	14,568 2.75%
Return to capital ($ millions)	85,289	-5.8 -0.007%	2,251 2.64%
Return to labor ($ millions)	139,131	-29.9 -0.02%	3,843 2.76%
Employment (persons)	3,647,000	400 0.01%	97,000 2.67%
Net household income ($ million)	179,207	174.5 0.10%	3,994.4 2.01%

* Detailed tables showing the long-run and short-run effects by household group and industry sector and additional variables discussed above are available from the authors.

Effect on Sales and Property Taxes Paid by Households

With the property tax caps, property tax payments decrease for each income group.[5] Table 5 shows the average effects for the short run and long run, assuming that the numbers of households and owner-occupied households are constant over the long-run period. Higher income households have the largest average increase in sales tax payments (Table 5), and largest average decrease in property tax payments. This is not unexpected because consumption, sales tax, house values, and property tax payments are likely to increase with income. As a percentage of labor income the average change in sales and property taxes paid by households is smallest for high income households (results not shown) indicating that these changes add progressivity to the state's tax system.

The increase in sales tax paid results from three factors. First, the higher sales tax rate and second, lower property taxes allow households to have more disposable income to spend, some of which will be spent on sales taxable items. Finally, the new tax regime (lower property taxes and higher sales tax) will increase economic activity, part of which are sales taxable items. These factors ultimately increase demand for labor. The increased income created by new employment will be spent, in part, on sales taxable items. The simulation results in Table 5 show that average sales and property taxes paid increase more in the long run. Long-run property tax collections are higher because the home ownership rate grows, increasing the property tax base.

Effects on Household Income

In both the short and long run, we expect the property tax caps to have a positive effect on household income. The effect of the caps stems from two sources. First, the caps lower property tax payments for some households thereby increasing disposable income. The caps do not lower property tax payment for all households because the property tax payments of some households are below the cap. Second, the property tax caps cause changes in economic activity that affects employment, sales and income, which ultimately lead to higher incomes for some households.

Table 6 shows the effect of the caps on household income groups. In the short-run, net household income decreases for lower income households and increases for other income groups. Among the lower income groups (income less than $35,000), there is a decrease in net income in the short run because the decrease in property tax is not enough to replace the increase in sales tax along with the changes in all other taxes, savings, and transfers. Home ownership rates are likely to be lower and house values are likely to be lower for those households that do own property, causing property tax savings to be lower overall for these groups. In the long run, because the economy performs better than in the short run, net household income is higher in all household groups due to the increase in returns to labor. Higher income households benefit more in terms of the magnitude of the increase in net household income. As a percentage of labor income the benefit is roughly proportional (ranging from 2.5% to just over 3%) indicating that in the long run the increase in household income resulting from the caps is approximately equal across income groups when measured as a percent of labor income.

Effect on Household Welfare

Equivalent variation (EV) is a measure of the welfare effects (or benefits) of a policy change. It is widely used in economic evaluation of policy and can be interpreted as the payment a household would require to return to the original tax regime – no property tax caps and no sales tax increase. A positive EV indicates households would have to be paid to return to the original regime because they were better off under the new regime. A negative EV indicates that households would be willing to pay to return to original tax regime (are worse off under the new regime).

With property tax caps and a higher sales tax, households with incomes less than $35,000 are worse off under the new regime in the short run and would be willing to return to the original property tax regime (Table 7). This results from a large portion of these households not benefitting directly from the property tax caps because they don't own property while paying higher sales tax. Households with income above $35,000 are better off with the property tax caps and a higher sales tax.[6] The majority of households in these income groups own property, and these households experience substantial deductions in average property tax payments. In the long run, all household groups are better off under the new tax regime due to the higher net household income.

Effect on Business Property Tax Payments

In the short run, all industry sectors experience a decrease in business property tax payments (Table 8). The industries that benefit the most in terms of the actual dollar decrease in property taxes are retail, wholesale, and real estate, and utility. Industries such as those related to agriculture and rental properties (apartments) benefit the most in percentage terms with declines of more than 12 percent and 20 percent respectively. Most other sectors experience

Table 5: Average Additional Household Sales Tax and Property Tax Paid by Each Household Group

Household Income Group	Average Change in Sales Taxes per Household* ($)		Average Change in Property Tax Paid per Owner-Occupied Household** ($)	
	Short run	Long run	Short run	Long run
Income less than $10,000	142	143	-347	-344
$10,000 to $14,999	164	166	-312	-307
$15,000 to 24,999	168	171	-288	-281
$25,000 to $34,999	219	223	-322	-313
$35,000 to $49,999	313	319	-499	-484
$50,000 to $74,999	327	335	-561	-539
$75,000 to $99,999	352	360	-650	-627
$100,000 to $149,999	367	375	-670	-644
$150,000 or more	432	442	-792	-761
Total or average	279	284	-517	-499

 * Additional sales tax is paid by all households in each income group, not only owner-occupied households.
** Estimated number of owner-occupied households from 2000 Census Public Use Microdata Sample

Table 6: Effect on the Distribution of Household Income

Household Income Group	Avg. Change in Net HH Income* ($ per Household)		Avg Change in Net HH Income (% of Labor Income)
	Short run	Long run	Long run
Income less than $10,000	-11.7	151	3.1%
$10,000 to $14,999	-8.3	414	3.2%
$15,000 to 24,999	-5.0	676	3.2%
$25,000 to $34,999	-34.4	914	2.8%
$35,000 to $49,999	48.7	1,455	3.2%
$50,000 to $74,999	110.0	2,000	2.9%
$75,000 to $99,999	193.6	2,205	3.0%
$100,000 to $149,999	195.8	2,439	2.8%
$150,000 or more	171.6	2,899	2.5%
Average	71.7	1,476	2.9%

* Gross household income less household income taxes, household property taxes, sales taxes, all other taxes, savings, inter-household transfers and overseas transfers.

Table 7: Equivalent Variation Under Each Simulation ($ per Household*)

Household Income Group	Simulation	
	Short run	Long run
Income less than $10,000	-12.4	151
$10,000 to $14,999	-9.2	414
$15,000 to 24,999	-5.8	676
$25,000 to $34,999	-35.4	913
$35,000 to $49,999	47.2	1,454
$50,000 to $74,999	108.3	1,999
$75,000 to $99,999	191.7	2,204
$100,000 to $149,999	193.7	2,438
$150,000 or more	169.2	2,897
Average	70.2	1,475

* This is the average EV for all households in each income group, not only owner-occupied households.

Table 8: Total Business Property Tax Paid by Sector

Industry	Base Run	Simulation		Industry	Base Run	Simulation	
	Total business property tax paid by sectors ($ millions)	Short run (% change)	Long run (% change)		Total business property tax paid by sectors ($ millions)	Short run (% change)	Long run (% change)
Crops	29.63	-12.64	-10.67	Transportation equipment	96.76	-3.73	0.00
Animal	12.27	-12.39	-10.68	Furniture	8.56	-3.68	0.62
Misc agriculture	2.44	-12.73	-9.56	Misc nontaxable manufacturing †	9.34	-3.42	0.56
Mining ‡	78.01	-3.83	-1.03	Misc manufacturing	4.44	-3.89	-1.51
Utility ‡	344.77	-3.92	-1.57	Wholesale trade † ‡	1,278.39	-3.49	-0.57
Construction †	61.54	-3.77	0.61	Retail trade ‡	1,358.19	-3.95	-1.82
Grocery †	32.31	-3.33	-1.53	Transportation †	134.61	-3.56	-0.77
Other food	16.52	-3.81	-1.96	Information ‡	171.46	-3.85	-1.54
Textile & leather	2.53	-3.93	-1.67	Finance † ‡	242.43	-3.32	-1.06
Wood	7.25	-3.68	0.55	Apartment † ‡	195.37	-20.30	-18.38
Paper	16.28	-4.01	-1.22	Real estate † ‡	502.39	-3.39	-1.07
Printing	8.01	-3.83	-1.65	Professional †	63.36	-3.58	-0.85
Petroleum & coal	20.98	-3.85	-1.29	Management †	19.40	-3.61	-0.79
Chemical	21.98	-3.70	-0.81	Administration †	65.20	-3.57	-1.21
Pharmaceutical †	52.35	-3.27	-1.58	Education †	8.39	-2.90	0.06
Plastics & rubber	34.46	-3.66	-0.60	Health †	89.06	-2.99	-0.93
Nonmetallic mineral	15.05	-3.74	-0.07	Art & entertainment † ‡	130.12	-3.18	-1.03
Primary metal	108.48	-3.73	0.20	Hotel ‡	49.34	-3.89	-1.14
Fabricated metal	29.66	-3.71	-0.08	Restaurant ‡	199.91	-3.95	-1.89
Machinery	27.65	-3.62	0.96	Other services taxable	13.61	-4.01	-1.49
Computer & electronics	12.65	-3.72	-0.47	Other services nontaxable † ‡	198.75	-3.34	-1.09
Electrical appliance	12.25	-3.77	-0.24	Total	5,786.14	-4.28	-1.77

† Non sales taxable sectors   ‡ Sectors which pay high property taxes in the base run (more than 1% of its total output)
Note: See Appendix for industry definitions.

decreases in the range of 3 to 4 percent. In the long run, there are some sectors (construction and related sectors, and education) that turn out paying more business property tax. This is consistent with the effect of an improvement in economic conditions.

Conclusions, Limitations, and Implications

In 2010, property tax rate limits (caps) will be fully implemented in Indiana. These limits constrain property tax payments to a maximum of 1 percent of gross assessed value (AV) on homesteads, 2 percent of AV on apartments, other residential, agricultural land, mobile home land and long-term care facilities, and 3 percent of AV on nonresidential (primarily business) real property and personal property. As part of this restructuring, the state is funding the school general fund and county child welfare fund by increasing the sales tax rate from six to seven percent. The purpose of this analysis is to provide estimates of the economic effects of the property tax caps and increased sales tax on households and industries.

While this study offers a useful tool and substantial detail in its simulation results, there are weaknesses, and we should be clear about what the model does not do. This analysis offers no insight into whether the state constitution should be amended to include property tax caps. In addition, the model isolates the effects of the property tax caps and sales tax rate increase but does not in-

clude the impact of changing economic conditions like the recent recession. Also, the timing of impacts is not precise. As with any CGE, the adjustment speed is unknown. In a policy setting the speed of adjustment is critical for states wrestling with revenue changes resulting from changes to property and sales taxes. The results of this model show estimates of the magnitude of the impact from implementing property tax caps along with a higher sales tax. The simulation results presented here were constructed under both a short to intermediate time frame and the long run. As such the timing of these effects may be distributed over 1-2 years for short run and 3-5 years for long run.

In the short run, we find a relatively small impact on aggregate economic measures. This is the case even though our model does not effectively capture the phase-in period, which lessens the negative impact of the reduction in local government expenditures. Even these small values overstate the impacts (both positive and negative) because we do not model the phase-in of the caps, but treat the entire change as a single discrete event. The effects of the property tax caps and the increase in sales tax are relatively small although individual households may experience large effects.[7] The value of output produced in the state (Gross Regional Product) decreases by -0.12 percent or about $296 million over the short-run. In the long run, the effects are strongly positive, with these changes to tax legislation causing GRP to increase by $6.2 billion or 2.6 percent.

As expected, the property tax caps have a small but positive effect on household income in the short run and a positive effect in the long run. Overall household income increases 0.10 percent (more than $174 million) in the short run and 2.39 percent (more than $3.9 billion) in the long run with higher income households benefiting more than lower income households in terms of the dollar amount of the increase, but household groups experience approximately equal gains as a percentage of labor income. Similarly, property tax payments decrease for each household group with the average decrease being higher for higher income households, but lower income households benefitting more as a percentage of labor income. The average additional sales tax paid increases with income, but decreases as a proportion of labor income. Not shown in our model is the expected increase in population and home ownership rate associated with increased incomes and economic activity in the long run. As a result, the long-run estimates are upper bounds.

State and local government revenue decreases by $496 million (0.8 percent) in the short run when the caps are imposed and the state sales tax is increased by 1 percent. Businesses experience a relatively large decrease in property tax payments (4.3%, $248 million in the short run; 1.77%, $103 million in the long run), with some construction and related sectors paying more business property taxes in the long run due to the business expansion.

While in the short run the property tax caps and a higher sales tax do lead to a small increase in the level of employment in the state (400 jobs), there are substantial shifts in labor among industries that ultimately affects labor returns. Employment increases in some sectors that initially had higher property taxes (wholesale, finance, apartments, real estate).[8] There are also large decreases in employment in other sectors (public administration, restaurants, construction, retail, transportation equipment, fabricated metals and professional services). The adverse effect on retail and restaurants results in part from the sales tax increase. In the long run, as businesses respond to the increase in investment, the state can realize a growth in employment of 97,000 workers.

There are also shifts in capital use in the short run with increases to industries that initially had high property taxes (apartments, real estate, wholesale and finance) and decreases in capital use in the government sector. The net result is no growth in capital returns over the short run. Over the long run, both capital use and returns to capital increase by $2.25 billion. This is the genesis of much of the increased investment and GRP in this study.

The majority of states have implemented some form of property tax limit, yet little analysis has examined the economic effects of these limits. We examine the economic impact of property tax rate limits in Indiana. Results of the CGE analysis show that the property tax caps even with the sales tax increase are expected to have a positive effect on the Indiana economy in the long run increasing employment, income and investment.

Notes

1. Thank you to Pongsun Bunditsakulchai for valuable comments and suggestions on the CGE model.
2. The statute is HEA 1001 (P.L. 146-2008).
3. There are no limits on the growth in assessed value (AV), so the property tax levy can increase due to growth in AV.
4. The IMPLAN data used to estimate the CGE model does not include assessed property value. We use household property tax paid divided by total household expenditures (by groups) and business property tax paid divided by total output (by sectors) as a proxy for the property tax rate.
5. The Consumer Expenditure Survey (CES) from the Bureau of Economic Analysis determines the groupings.
6. Our model treats EV as a combination of taxes, income and the receipt of public services. As with most CGE Models, our model does not capture the distinction between local and state public services. In Indiana, state government provides virtually all services targeting lower income households. As a consequence, our model overstates the loss of services to low income households because the tax cuts resulting from the tax caps falls exclusively on local government. For that reason, the impact of EV we report in this section overstates the actual effect on lower income households.
7. The CGE model captures the aggregate and average effects on household income groups not individual households.
8. Detailed tables with these results are not shown.

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Appendix

Table 1: List of Sectors

	Sector	Details
1	Crops	Crop production
2	Animal	Animal production
3	Misc agriculture	Logging, forestry, fishing, hunting, trapping, and agricultural support
4	Mining ‡	Mining and quarrying
5	Utility ‡	Utilities
6	Construction †	Construction
7	Grocery †	Groceries
8	Other food	Other processed food
9	Textile & leather	Textile and leather product manufacturing
10	Wood	Wood product manufacturing
11	Paper	Paper manufacturing
12	Printing	Printing and related support activities
13	Petroleum & coal	Petroleum and coal product manufacturing
14	Chemical	Chemical manufacturing
15	Pharmaceutical †	Pharmaceutical and medical manufacturing
16	Plastics & rubber	Plastics and rubber product manufacturing
17	Nonmetallic mineral	Nonmetallic mineral product manufacturing
18	Primary metal	Primary metal manufacturing
19	Fabricated metal	Fabricated metal product manufacturing
20	Machinery	Machinery manufacturing
21	Computer & electronics	Computer electronic electrical equipment manufacturing
22	Electrical appliance	Electrical equipment appliance and component manufacturing
23	Transportation equipment	Transportation equipment manufacturing
24	Furniture	Furniture and related product manufacturing
25	Misc nontaxable manufacturing †	Miscellaneous manufacturing (non sales taxable)
26	Misc manufacturing	Miscellaneous manufacturing (sales taxable)
27	Wholesale trade † ‡	Wholesale trade
28	Retail trade ‡	Retail trade
29	Transportation †	Transportation and warehousing
30	Information ‡	Information
31	Finance † ‡	Finance and insurance
32	Apartment † ‡	Apartment
33	Real estate † ‡	Real estate
34	Professional †	Professional scientific technical services
35	Management †	Management of companies and enterprises
36	Administration †	Administrative and support, and waste management and remediation
37	Education †	Educational services
38	Health †	Health care and social assistance
39	Art & entertainment † ‡	Art, entertainment, and recreation
40	Hotel ‡	Hotel and accommodation
41	Restaurant ‡	Restaurants
42	Other services taxable	Other services sales taxable
43	Other services nontaxable † ‡	Other services non sales taxable
44	Government & special sectors †	Public administration and special sectors

† Non sales taxable sectors
‡ Sectors which pay high property taxes in the base run (more than 1% of its total value of output)

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People

Michael Hicks, PhD
Director

Dagney Faulk, PhD
Director of Research

Judy Lane
Associate Director

Nalitra Thaiprasert, PhD
Research Economist

Srikant Devaraj
Research Associate

Lisa Goodpaster
Secretary

Jessica Tennant
Publications/Web Coordinator

Graham Watson
Web Development Specialist

Victoria Meldrum
Project Assistant

Graduate Assistants

Joshua Doane, Alexander Falevich, Desiree Howell, Hikoyat Salimova, and Mert Uygar

BALL STATE UNIVERSITY

CENTER FOR BUSINESS AND ECONOMIC RESEARCH

Whitinger Business Building, room 149
2000 W. University Ave.
Muncie, IN 47306-0360

Hours: (M-F) 8 a.m.-5 p.m. • E-mail: cber@bsu.edu
Phone: 765-285-5926 • Fax: 765-285-8024

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Center for Business and Economic Research
Miller College of Business, Ball State University
Whitinger Business Building, room 149 • Muncie, IN 47306
Phone: 765-285-5926 • Fax: 765-285-8024

www.bsu.edu/cber